The challenges of preparing pre-service teachers to embrace a digital pedagogy

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Introduction

The need for pre-service teachers to be proficient in the use of information and communication technologies (ICT) in the classroom once they graduate is essential, though this process is not a straightforward process (Zhang, 2008) and needs to go beyond pre-service teachers just being able to use ICT. Research suggests that for teachers to successfully use ICT in their classrooms they need to be specifically trained to do so (Markauskaite, 2007; Batane, 2004; Jacobsen, Clifford & Friesen, 2002). Pre-service teachers must also be able to embrace and use new and emerging ICT's, often referred to as digital technologies, within their pedagogical approaches to teaching and learning. According to UNESCO, these "new technologies require new teacher roles, new pedagogies, and new approaches to teacher training" (2008, p.9). However, new approaches to teacher training have moved very slowly in many areas and preparing pre-service teachers to develop proficiency in embracing a digital pedagogy within their own classrooms can be a challenge for teacher training institutes. This paper reports on a case study of first year education students (N=667) and their experiences during their first semester of pre-service teacher education in a core ICT unit. It will report on the background ICT knowledge and skills that these students bring to the course as well as their expectations of the unit and ICT in their future teaching. The paper will then draw on the research results to identify challenges facing teacher training of pre-service teachers in using digital technologies in their future classrooms.

Over the past two decades there has been a plethora of research based around information and communication technologies (ICT) in school education with many educational institutions and systems now mandating its use. Consequently, the use of ICT has become an essential component of teaching and learning (Walters and Ferhing, 2009; Lin, 2008; Wang, 2008 and Wellington, 2005) and there is an expectation that all educators use ICT in their teaching and learning practices (ACARA, 2009 and MCEETYA,

2008). During this time there has also been a number of labels applied to students in schools. These have included students being labeled as students of the "net generation" (see Tapscott, 1998) or being labeled as "digital natives" (see Prensky, 2001), essentially meaning that the students at this time were (and still are) seen to be growing up with the all pervasive digital technologies and connectedness that exists in society and that this is a normal part of their day to day lives. According to the Australian Communication and Media Authority (ACMA), "electronic media and communications activities take up around half of young people's total discretionary time" (ACMA, 2008, NP) while BECTA claims that "today's students use technology (IM, Facebook, Flickr, Skype) to be constantly connected to friends, family, information and entertainment (2008, 12). The National School Boards Association (NSBA, 2007), also noted that in their research, at least 81% of the students surveyed reported visiting a social networking website and that at least one in five students (20%) posted comments on message boards every day.

More recently, the increase in the availability and use of portable mobile devices has had a number of impacts on society, including those of digital device ownership and use within educational institutions. Consequently, this evolution of wirelessly connected mobile devices has driven even higher expectations for the use of ICT in education and there is a growing body of research in this area (see Gaskell and Mills, 2010; Goundar, 2011; McGarr, 2009; Tremblay, 2010 and Valk, 2010). There is little doubt that the students of today are embracing digital technologies and that there is an opportunity for educators to exploit this in their classrooms.

Research Findings

The research presented here is an exploratory case study designed to understand the ICT background of students entering a pre-service teacher education program and their experiences of using ICT in the first semester of their course. More specifically the research draws upon the students' experiences in a core ICT unit and their expectations towards ICT in their future teaching while preparing them to use digital technologies in their future classrooms. The first year pre-service teacher cohort (N=667) consists of a mixture of early childhood, primary and secondary pre-service teachers. The research was of a mixed method research design consisting of both qualitative and quantitative data. Students were asked to voluntarily complete an online survey at the beginning of the semester and a follow up online survey at the end of the semester. Semi-structured interviews were conducted with students throughout the semester.

The online survey conducted at the beginning of the semester resulted in an 80% (N=667) response rate with the respondents being mainly female (74%) with 74.1% of students indicating that they had good or excellent computer skills. A majority of the respondents (81.5%) were 15-22 years of age indicating that they could be labeled as having grown up with digital technologies and having had the opportunity to use them from a young age. A majority of students (86.9%) also had good to excellent access to the Internet with 92.7% owning a laptop, 77.5% owning a smart phone and 45.2% owning a desktop computer. This would indicate that a large number of students would own at least two digital devices and that a majority of them had good to excellent internet access. These findings would support current literature that suggest students use and have access to digital devices. The survey further indicated that the main activity that students used their digital devices for was email with 88.9% of students regularly or always using email. The next most common use was for Facebook (84.6%) followed by research for study and teaching (77.7%). The survey found that 92.1% of students had never used Flickr and that 81.8% of students had never used Twitter. It further found that 69.2% of students had never published online in a wiki or blog and that 71.5% had never contributed to a forum.

When students were asked to indicate on a scale of 1 to 5 how important they thought the use of ICT was in the classroom with 5 being very important, 25.8% of students indicated it was a 5 with 39% indicating it was a 4. In contrast to this 72.1% indicated that they would feel confident using ICT in the classroom and 89.1% of students indicated that there was a place for smart phones and tablet computers in the classroom.

While this was a first semester core unit the students seemed quite enthusiastic about the use of mobile digital devices in the classroom with many of the students indicating that they thought mobile devices in the classroom was great as it allowed them to take photos or video of a particular procedure, concept or even notes. The qualitative data collected around this question further indicated that students also wanted “quick access to knowledge” and that there were “interesting apps for everything”.

The qualitative data further indicated that the main expectations of the students enrolled in this core unit were focused around familiarity with ICT and improvement of their ICT skills, the importance and advantages of using ICT in the classroom and the application of ICT in the classroom. Students indicated that they wanted to be “comfortable using technology to

teach students of the future". In the follow up survey there was a 33% (N=667) response rate with 72.7% of respondents indicating that their confidence and ability to recognise approaches and implementations of ICT in an educational context had increased.

During interviews a number of students raised issues with the relevance of using ICT in their particular areas of interest. In particular, students from the early childhood courses or secondary courses (in particular Physical Education) struggled to see the relevance of using ICT in their future classrooms and questioned the need to undertake a core unit in ICT. Students questioned the pedagogical approaches taken within the university with regards to the integration and use of ICT within this core unit and other units that they were undertaking. However, the interviews with students also indicated that many students also questioned the expertise of other lecturers in their understanding and use of ICT in their particular areas of expertise as well as those of the tutors in the core unit.

When talking about pedagogy some students indicated that they did not understand pedagogical approaches to using ICT in the classroom as they had only experienced the classroom as a student not as a pre-service teacher and couldn't imagine what it would be like to use ICT in the classroom. In many cases the students had only recently finished their senior secondary schooling and the core unit on ICT was in their first semester of university.

Conclusion

The findings of the research presented here enable conclusions to be made about some of the challenges of preparing pre-service teachers to use digital technologies in their future classrooms. It is of particular note that the background experiences and skills of each cohort are taken into account such that the learning experiences can be tailored to each cohort. Sometimes a very tightly written unit or course structure will not allow for this flexibility and this poses a problem within pre-service courses. Additionally, pre-service teachers, lecturers and tutors need to be able to demonstrate the relevance and sound pedagogical approaches to using digital technologies in their areas of expertise as well as generically in education and given that the ICT Core unit is offered at the start of their pre-service training there needs to be opportunities for all pre-service teachers to undertake further formal studies into the pedagogical approaches of using digital technologies prior to the completion of their course. In addition to this students were faced with an unchanged,

outdated model of formal lectures, tutorials and workshops constrained by university infrastructure.

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